A STUDY OF THE EFFECT OF TEACHING THE SCIENCE RESEARCH ASSOCIATES READING LABORATORY IIc ON THE READING ABILITY OF DEAF STUDENTS

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by

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August, 1966

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A STUDY OF THE EFFECT OF TEACHING THE SCIENCE RESEARCH ASSOCIATES READING LABORATORY IIc ON THE READING ABILITY OF DEAF STUDENTS

A Thesis

Presented to

the Faculty of the Graduate School

Appalachian State Teachers College

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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August, 1966

ACKNOWLEDGMENTS

It is a pleasure to thank those who have contributed to the completion of this research.

I am deeply indebted to Dr. C. Milton Blue for supportive direction and for many helpful suggestions. I am grateful indeed to Dr. Walter T. Snipes for reading the preliminary thesis and offering pertinent comments.

Expressing my appreciation to Mr. Ben E. Hoffmeyer and David M. Denton, Superintendent and Principal, respectively, of the North Carolina School for the Deaf, is an inadequate way to thank them for the willing and whole-hearted cooperation they gave to the research project.

I would like to express my thanks, also, to the children involved in the study. Their happy interest on a day to day basis made each class session a great pleasure.

I shall always be grateful to Mrs. Alice Reid, skillful typist, who responded beyond the call of duty.

North Carolina School for the Deaf
Morganton, North Carolina
July 5, 1966

AN ABSTRACT

It was the purpose of this research to investigate, using a control group design, the effectiveness of the use of a structured approach in the teaching of reading to deaf pupils. It consisted of the administration to all subjects of a pre-test, the establishment of experimental and control groups, the application of instruction in the Science Research Associates Reading Laboratory IIc daily, for nine weeks, and the administration of a post-test to all subjects. The effectiveness of the treatment was determined by gain scores, statistically treated.

Subjects for the experimental study included forty-one students at the North Carolina School for the Deaf in grades 5A, 5B, 8A, and 9A. All students were deaf except nine hard of hearing students, grade 5B. Approximately half of the pupils in each grade were selected randomly as experimental subjects and received the instruction. The remaining pupils in each class, acting as controls, received no instruction other than that supplied by their regular reading teacher.

The experiment explored the following questions: (1) Was there a gain in mean level of attainment on the basic

reading scores of deaf children when the SRA Reading Laboratory IIc was presented daily for nine weeks? (2) Was the instruction more effective at one grade level than another? and (3) Was the effectiveness of the instruction comparable for both deaf and hard of hearing pupils?

The results: (1) One group, 5A, demonstrated gains significant at the five per cent level of confidence. (2) Instruction was more effective at the level of grade 5A than at grades 8A or 9A. (3) 5A, composed of deaf pupils, demonstrated a gain, while 5B, a class composed of hard of hearing pupils, showed a gain attributable to chance alone.

It was hypothesized that the instruction time interval was not great enough for generalizing. It was further hypothesized that the proportion of the sample to the parent population was too small for significant results.

It was the subjective judgment of the examiner that the value of the SRA Reading Laboratory IIc as an approach to teaching deaf children the skills which underlie growth in reading, namely: study, dictionary, and library skills; word attack in vocabulary building; and independence in reading not be overlooked.

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

The single most important skill taught in the schools might very well be reading. The development of reading skills is a prerequisite to a child's educational development, for difficulties in reading will retard the child in every other subject.[1]

I. THE PROBLEM

Statement of the problem. Academic success depends upon reading, a subject which deaf children find extremely difficult. If reading proficiency could be attained, academic achievement could increase correspondingly.

It was the purpose of this research to investigate the effectiveness of the use of one approach, namely, the use of the Science Research Associates Reading Laboratory IIc, in the teaching of reading to deaf children. The Science Research Associates Reading Laboratory IIc (SRA Reading Laboratory)

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[1] W. M. Cruickshank and G. O. Johnson, Psychology of Exceptional Children and Youth (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963), p. 298.

attacks, by a variety of means, the skills which research points to as those in which deaf children are deficient.

Importance of the study. Reading skill is vital to the deaf child. The level of reading a deaf child is able to attain represents the ceiling of his linguistic competence.[2] The progress of the deaf child in reading tends to be much slower than that of the hearing child.[3] Accordingly his progress in other areas of education is retarded.[4] Denton surveyed the educational achievement of deaf children in twenty-six public schools for the deaf, with every major geographic area in the United States represented. He found that the average grade equivalent for 12-year-olds was 3.6; for 15-year-olds, 4.7; and for the 18-year-olds, 5.8.[5] Denton

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[2]Hans G. Furth, Thinking Without Language (New York: The Free Press, 1966), p. 15.

[3]Grace M. Harris, Language for the Preschool Deaf Child (2nd. ed.; New York: Grune and Stratton, 1963), p. 69.

[4]Ibid.

[5]David M. Denton, "A Study in the Educational Achievement of Deaf Children," Report of the Proceedings of the 42nd Meeting of the Convention of the American Instructors of the Deaf (Washington: Government Printing Office, 1966), p. 432.

further reported that the average deaf child was advancing only two grades between his twelfth and eighteenth birthdays.[6]

Templin, in 1954, investigated the reasoning power of normal and hearing deficient children. She found that there was no real difference in the mental ability of the dichotomous groups.[7] The study revealed, however, that hearing defective children were retarded in their level of generalization and in the accuracy of their explanations, and that the retardation persisted even when the variable of intelligence was controlled.[8]

The latest meeting of the International Congress on the Education of the Deaf was held at Gallaudet College in 1963. Elstad, at that time, reported on the educational expectations of deaf high school graduates. He pointed to available evidence which suggested that deaf people had the

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[6]David M. Denton, "A Study in the Educational Achievement of Deaf Children," Report of the Proceedings of the 42nd Meeting of the Convention of the American Instructors of the Deaf (Washington: Government Printing Office, 1966), p. 432.

[7]Mildred Templin, "Development of Reasoning in Children with Normal and Deficient Hearing," American Annals of the Deaf, 99:268, 1954.

[8]Ibid.

same intellectual potential as the normal hearing population.[9] Yet, in the United States, Elstad estimated that only ten per cent of the deaf population, as compared with fifty per cent of the hearing population, went on to higher education.[10]

Studies of the reading ability of deaf children in schools in the United States indicate that they are retarded in reading by approximately four years as measured on achievement tests standardized on a non-deaf population.[11] The greatest reading retardation is in the area of vocabulary, sentence meaning, and paragraph meaning.[12]

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[9]Leonard M. Elstad, "Broadening Our Educational Horizons," Report on the Proceedings of the International Congress on the Education of the Deaf and of the 41st Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1965), p. 110.

[10]Ibid.

[11]Alice H. Streng, "Reading", Report on the Proceedings of the International Congress on the Education of the Deaf and of the 41st Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1965), p. 468.

[12]Ibid.

II. DEFINITIONS OF TERMS USED

Science Research Associates Reading Laboratory, IIc. The Science Research Associates Reading Laboratory IIc is a multilevel, developmental, individualized reading improvement program. Skills in word meaning and vocabulary are attacked by means of exercises: (1) for word interpretation from the context of the stories, (2) for phonic and structural analyses of words and meanings, (3) for recognition of semantic variations in the meanings of words and sentences, (4) for the discovery of word relationships, and (5) for comprehension of exact word meaning. Opportunities for practicing skills in abstracting the meaning of sentences and paragraphs are incorporated in every lesson by exercises for specific details, for following directions, for differentiating between fact and opinion, and for comprehending ideas and evaluating them.

Additionally the Science Research Associates Reading Laboratory IIc (SRA Reading Laboratory) makes provision for the development of: (1) independent reading skills, (2) an increase in reading rate and comprehension, and (3) the use of charts and graphs of individual progress. Each pupil can

begin reading lessons in the SRA Reading Laboratory at his own reading level, from the second grade up to the ninth grade level. The laboratory contains materials which are of gradually increasing difficulty. The lessons are of high interest value and cover a wide range of subject and area fields.

Hard of hearing and deaf. The average hearing level of frequencies at 500, 1000, and 2000 cycles per second were used to define hearing loss. The hard of hearing are those whose average hearing loss in the better ear lies between 50 and 60 decibels (American Standard Audiometric zero reference level).[13] Children with losses greater than 60 decibels are deaf.[14]

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[13] Ira J. Hirsh, "Communication for the Deaf," Report of the Proceedings of the International Congress on Education of the Deaf, and the 41st Meeting of the Convention of American Instructors of the Deaf, (Washington: Government Printing Office, 1964), p. 173.

[14] Ibid.

CHAPTER II

REVIEW OF THE LITERATURE

Early studies of the deaf child gave attention to intellectual capacities and to tests for determining the mental abilities of sensorily deprived children. When it was indicated that deaf children were not inferior mentally,[1] research tended to emphasize investigation into the speech, speech reading, and grammatical aspects of language skills, rather than in reading. The necessity for research in reading has been recognized for long years, but much basic research in reading has not been forthcoming.[2]

Educators of the deaf are in agreement that prelingual (birth to three years) deafness is responsible for severe retardation in reading and educational achievement.[3] As early

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[1]Templin, loc. sit.

[2]Grace E. Wilson, "Utilizing Stimulants: Professional Sources and Research," Report of the Proceedings of the 42nd Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1965), p. 84.

[3]Powrie V. Doctor, "Motives and Motivation: A General View," Report of the Proceedings of the 42nd Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1966), p. 80.

as 1889, some thirty years before the appearance of the Pintner-Paterson performance scale, which was the first applied to deaf subjects, Greenberger, in an article in the American Annals of the Deaf recommended the use of a test as a measure of the intellectual level of deaf students.[4] The Heider and Heider experiment compared the sentence structure of deaf and hearing children and concluded that deafness in young children was responsible for a severe language and reading deficiency.[5]

Gladys Pugh, in 1946, determined that the majority of deaf children fell below the age-grade norms for normal hearing children.[6] The results of her study showed that the greatest reading weakness of deaf children was in word meaning and in sentence meaning.[7]

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[4]Pierre Oleron, "Psychological Testing," A Report of the Proceedings of the International Congress on Education of the Deaf, and of the 41st Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1964), p. 140.

[5]F. K. Heider and G. M. Heider, "A Comparison of Sentence Structure of Deaf and Hearing Children," Psychological Monographs, 13, 1940, 232.

[6]Gladys Pugh, "Summaries from 'Appraisal of the Silent Abilities of Acoustically Handicapped Children'," American Annals of the Deaf, 91:337, September, 1946.

[7]Ibid.

Goetzinger and Rousey studied the educational achievement of deaf children. They found a pronounced gap in reading ability existing between the deaf and the hearing populations and that the gap increased during the high school years.[8]

Myklebust investigated the reading of day and residential school deaf children and normal hearing children. The results indicated that the sensorily deprived children were retarded severely in reading and that the retardation increased with age.[9] Myklebust reported that by the time the deaf reached the age at which hearing children completed high school, they would be retarded seven to eight years, or would be reading below the third grade level.[10]

Furth, in 1966, determined that between the ages of ten and sixteen the deaf, on the average, did not advance one

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[8]C. P. Goetzinger and C. L. Rousey, "Educational Achievement of Deaf Children," American Annals of the Deaf. 104,2. March, 1959.

[9]Helmer R. Myklebust, Psychology of Deafness (New York: Grune and Stratton, Inc., 2nd. ed., 1964), p. 278.

[10]Ibid.

full grade in reading ability, and would be unable to understand sentences and paragraphs at grade four reading level.[11]

Pierre Oleron suggested, in 1965, that the two conditions which would contribute to progress in reading for the deaf child were: (1) an increase in research instruments, and (2), the use of more experimental methods.[12]

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[11]Hans G. Furth, Thinking Without Language (New York: The Free Press, 1966), pp. 13-14.

[12]Pierre Oleron, "Psychological Testing," The Report of the Proceedings of the International Congress on Education of the Deaf and the 41st Meeting of the Convention of American Instructors of the Deaf (Washington: Government Printing Office, 1966), p. 144.

CHAPTER III

RESEARCH DESIGN

This study was undertaken first, to augment the body of research already available concerning the reading ability of deaf children, and secondly, to investigate the effectiveness of teaching a specific structured reading program, the SRA Reading Laboratory IIc, to deaf students.

Questions for study. The application of a specific structured reading program, that is, the SRA Reading Laboratory IIc, earlier described (See Definition of Terms), was evaluated in terms of the following questions:

1. Was there a gain in the mean level of attainment on the basic reading test scores of deaf children when instruction in the Science Research Associates Reading Laboratory IIc was presented for a daily forty-five minute session for a period of nine weeks?

2. Was it likely that the forty-five minute daily session of instruction for the nine-week period was more effective at one grade level than another, as indicated by a difference in the initial scores and the post-test scores?

3. Would dominance factors be related to differences in a change in reading ability?

4. Would the presence of specific language deficiencies (receptive or expressive aphasia, or dyslexia) affect the reading score and/or the amount of gain in reading ability after the presentation of the SRA Reading Laboratory IIc for nine weeks?

5. Was there an equal change, as a result of the treatment, in the reading ability of the subjects who were prelingually hard of hearing and those subjects who were considered to be prelingually deaf?

Development of the Design. The research study was a control group design. It consisted of: (1) the establishment of experimental and control groups for study; (2) the administration to all subjects of diagnostic tests for the evaluation of lateral dominance, intelligence, presence of aphasia or dyslexia, and hearing acuity, if the student cumulative records did not yield these data; (3) the administration to all subjects of a pre-test, Gates Reading Survey, 1958, Form 1; (4) the teaching of the SRA Reading Laboratory IIc for a period of nine weeks, a conventional time division, to the experimental groups; and (5) a post-test for all

subjects, Gates Reading Survey, 1958, Form 2, a form equivalent to Form 1 which was used as a pre-test. The effectiveness of the treatment was determined by a statistical comparison of gain scores of the experimental and control groups, that is, the difference between pre-test and post-test scores.

CHAPTER IV

POPULATION

Subjects were selected from class groups at the North Carolina School for the Deaf (NCSD). Entire grade groups were chosen as subjects in order not to interfere with class procedures more than necessary. The composition of classes at NCSD by definition was predetermined on the basis of reading achievement (scores earned on annual Stanford Achievement Tests).

The parent population. The student population of NCSD was assumed to be nearly typical of the residential schools for the deaf in the United States because of the large enrollment, the urban and rural school population, and the varied socio-economic backgrounds of the population. NCSD has approximately 500 deaf and severely hard of hearing students. It is estimated authoritatively that of this number thirty-six per cent have medically diagnosed disabilities in addition to hearing deficiency.[1] Many other students, not

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[1]Ben E. Hoffmeyer, "The Multiple Handicapped Child," Medical Times (August, 1961), p. 808.

professionally diagnosed, displayed symptoms of brain injury.[2] The need to have educational procedures expanded to fit their needs is urgent.

No student was eliminated from this study because of the presence of a multiple disability. Multiply handicapped children, those with two or more social or educational incompetencies, were presumed to be present in classes selected as subject groups.

Factors of levels of intelligence, of socio-economic background, of classroom performance, and of physical ability were not considered in the selection process. It was expected that the sample subjects might fall into the following or similar categories: superior, average, slow learning, mentally retarded, dyslexic, cerebral palsied, et cetera, and would be representative of the parent population.

NCSD is organized into the following departments of schools: the Lower School, the Middle School, and the Upper

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[2]Ben E. Hoffmeyer, "The Multiple Handicapped Child," Medical Times (August, 1961), p. 808.

School. The Lower School consists of the preparatory years, one through three. The Middle School includes grades one through five. The Upper School is subdivided into two departments: first, the intermediate department, including grades six through eight, and secondly, the advanced department, including grades nine through twelve.

Sample selection. Rotating class schedules and other educational considerations prevented selection of the sample group on an alternate year basis, despite the desire of the examiner. Four classes were selected as the sample population. They were two groups from grade five of the Middle School; 5A, deaf students, and 5B, hard of hearing students; and two grades from the Upper School, one grade from each department, grades 8A and 9A, both of which were composed of deaf students. (See Definition of Terms.) Numerically the sample included grades 5A and 5B with nine subjects in each grade; 8A, with twelve subjects; and 9A with an enrollment of eleven, making a total sample of forty-one.

All subjects were given the Gates Reading Survey, 1958, Form 1 as a pre-test. The subjects in each grade were then divided and approximately half of the subjects in each grade, as control groups, received no reading instruction other than

that taught by their regular reading teacher and contained in the conventional reading curriculum. The remaining subjects in each grade, the experimental grade groups, were taken from their regular classroom to another room where they received instruction in the SRA Reading Laboratory IIc for a daily forty-five minute class period for a term of nine weeks.

The sample selection in grades 5A and 5B were as follows: children were allowed to sit anywhere they chose. The examiner assigned the child in the first chair and the one in each alternate chair to the experimental groups. The remaining children in each class acted as control groups.

Samples were selected on a somewhat different basis in grades 8A and 9A. Students in each class were assigned, randomly, either a letter or a number. The examiner then selected three letters and three numbers from class 8A. Students who had been assigned the selected numbers or letters composed the experimental group. Three letters and two numbers were chosen by the examiner for the 9A experimental group, as there was an uneven number of subjects, eleven. The remaining students in each class acted as control groups.

The same forms of the Gates Reading Survey over the same time interval were used with both control and experimental subjects, thereby minimizing the variables of practice effect and nine-week maturity. Instructional effects were reduced inasmuch as the examiner provided all of the instruction to the experimental groups.

CHAPTER V

DATA

Collection of data. Descriptive data; chronological age, sex, IQ as measured by the Chicago Non-Verbal Examination, onset of deafness, hearing loss in decibels, handedness, and presence of handicaps or disorders in addition to hearing deficiency were collected from the NCSD cumulative record of each student.

Gates Reading Survey, Form 1 was administered to all of the sample grades. The experimental and control groups in each grade took the test together. They were retested at the completion of the nine-week instruction period. Gates Reading Survey, Form 2, 1958, was used as a post-test. Raw scores obtained on both the pre-test and the post-test were collected.

Treatment of the data. Descriptive information concerning the subjects is presented in Table I. See Table II for descriptive data concerning the subject groups.

Pre-test and post-test raw scores for the experimental and control groups were listed. Mean raw scores were obtained,

as were standard deviations and the standard error of the mean. A standard error of the difference between pre-test and post-test raw scores was computed. To summarize the relationship between the two sets of data, or the two sets of mean raw scores (pre-test and post-test), the coefficient of correlation was calculated, using the Pearson product-moment formula. See Table III for a statistical comparison between the experimental and control groups.

CHAPTER VI

RESULTS AND CONCLUSIONS

Plans of the examiner were to consider the place of dominance factors in relation to the effectiveness of reading. The number of left-handed pupils contained in the research sample was too slight to be of any significance, and consideration of dominance was abandoned.

The examiner expected that one-third of the sample population would be multiply handicapped because the sample was selected randomly. Only three students out of the sample of forty-one had more than one incompetency, ruling out evaluation of data concerning multiple disability. All sample grades were "A" classes except the hard of hearing group, 5B. It is speculated that there may have been fewer multiple handicapped children in the sample because pupils with a disability would more than likely be placed in a "B" or "C" class, a more homogeneous grouping.

Questions under study. The questions earlier posed for study were:

1. Was there a gain in mean level of attainment on the basic reading scores of deaf children when instruction in the SRA Reading Laboratory IIc was presented for a daily forty-five minute session for a period of nine weeks?

2. Was it likely that the forty-five minute daily session of instruction for the nine-week period was more effective at one level than another, as indicated by a difference in the initial test scores and the post-test scores?

3. Was there the same amount of gain in the reading ability of the subjects who were hard of hearing and those subjects who were considered to be deaf?

Results. The 5A experimental group showed a gain, significant at the 5 per cent level of confidence, in the difference between pre- and post-test mean raw scores. Class 8A showed no gain. Gains made by the other two experimental groups were not statistically significant, and were attributable to chance alone.

The findings of the research indicated that reading effectiveness could be attained in a nine-week period when students received instruction in the SRA Reading Laboratory

IIc. It appeared, however, that the effectiveness did not obtain for all grade levels.

Inspection of Table II revealed a tendency for better performance or more effectiveness in reading as a result of instruction in the SRA Reading Laboratory IIc for a nine-week period when it was given to younger deaf children than when it was applied to the hard of hearing sample on the same grade level or to the older deaf students.

Analysis of the statistics revealed that the correlation coefficients, in general, were positive but imperfect. The degree of association implied in the coefficient of correlation was marked or high for all groups except that for the 5B hard of hearing control group, which indicated a definite, although low, relationship.

Conclusions. Statisticians seem to agree that the division between large and small samples is in the range of 25 to 30.[1] As the sample number decreases, distributions

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[1]J. P. Guilford, Fundamental Statistics in Psychology and Education, (New York: McGraw-Hill Book Company, Inc., 1956), p. 217.

depart more and more from the normal in a variety of ways. An experimental sample of twenty, representing three grade levels, renders sharp considerations or predictions inconclusive. A sample containing many more cases is needed before general conclusions can be drawn.

The short period of instruction for deaf children, pupils deficient in the quality being measured, might be expected to contribute to the non-reliability of the measurement. The standard time interval for tests of this type, many educators believe, is a period of a semester. Few non-chance conclusions have been drawn because of the small sampling and the short period of instruction.

Implications. No effort was made to measure motivation, freedom of choice, or frustration occurring at inability to comprehend reading materials. Nor was provision made for the evaluation of attitude toward the experimental instruction.

It was the subjective feeling of the examiner, supported by associate-teacher observation, that the children in the experimental groups demonstrated gains in independence, in methods of attack, and in study skills. Students in all

experimental groups began their daily reading without any direction whatever from the examiner, immediately upon entering the classroom.

Perhaps a value which should not be overlooked is the use of the SRA Reading Laboratory as an approach to teaching the skills which underlie growth in reading, namely: dictionary, library, and study skills; word attack in vocabulary building, independence in reading, and following directions.

It is hypothesized that the proportion of the sample to the total population was too small for results to be significant. It is further hypothesized that the instructional time interval was not long enough for measurements to be significant. It is possible that a replication of the study for a longer time interval with a larger group of subjects would yield results from which broad generalizations could be obtained.

CHAPTER VII

SUMMARY

Four entire classes of students, a total of forty-one pupils, enrolled at the North Carolina School for the Deaf were selected as subjects for the research: two classes from the Middle School, classes 5A and 5B; and two classes from the Upper School, one each from the intermediate and advanced departments, 8A and 9A. All children were deaf with the exception of those comprising 5B, all of whom were hard of hearing.

All students in the four groups were given the Gates Reading Survey, Form 1 as a pre-test. Approximately half of the subjects comprising each class group were randomly selected as the experimental classes and received reading instruction in the Science Research Associates Reading Laboratory IIc in a daily forty-five minute class session for a period of nine weeks. The remaining half of the class groups, acting as control subjects, received no reading instruction other than that supplied by their regular reading teacher.

At the end of the nine-week period of instruction all subjects, experimental and control, were given a post-test, an equivalent form of the pre-test. Raw scores were statistically treated: the mean of the raw scores was computed, as was the standard error of the mean; and differences between the raw scores of the experimental and control groups were analyzed by the application of the standard error of the difference.

One group, the experimental 5A group, showed a gain in the mean raw score after having had the instruction in the Science Research Associates Reading Laboratory IIc. The difference was significant at the 5 per cent level of confidence. Differences in the mean raw scores of the other groups were attributable to chance alone and were not reliable.

It is hypothesized that the proportion of the sample to the total population was too small for results to be significant. It is further hypothesized that the instructional time interval was not long enough for measurements to be significant or for generalizations to be made.

Further research, using a larger sample, for a longer period, might produce significant results.

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D. PERIODICALS

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APPENDIX

TABLE I

DESCRIPTIVE DATA ON THE SUBJECTS

Experimental Group							Control Group						
List Class Group	Ss	Age	IQ	Sex	Onset of Deafness	Hearing Loss in Decibels	List Class Group	Ss	Age	IQ	Sex	Onset of Deafness	Hearing Loss in Decibels
5A	1	12.9	99	M	birth	85	5A	2	15.6	102	M	birth	93
	3	11.11	105	M	birth	90		4	13.2	99	M	14 mos.	87
	5	12.10	102	F	birth	90		6	14.4	87	F	3 years	58
	7	13.0	103	F	?***	78		8	13.10	93	F	birth	93
	9**	15.0	98	F	birth	98							
5B	1	14.6	106	M	2 years	60	5B	2	11.1	101	M	birth	66
	3*	13.5	90	F	?***	60		4	13.6	96	F	?***	65
	5	13.0	86	F	?***	53		6	12.7	101	F	birth	88
	7	13.4	85	M	birth	61		8**	13.7	106	F	?***	70
	9**	14.2	96	M	birth	55							

TABLE I (continued)

Experimental Group							Control Group						
List Class Group	Ss	Age	IQ	Sex	Onset of Deafness	Hearing Loss in Decibels	List Class Group	Ss	Age	IQ	Sex	Onset of Deafness	Hearing Loss in Decibels
8A	2	14.3	113	M	?***	70	8A	1	15.9	102	M	birth	95
	4	16.8	102	M	birth	58		3	15.2	99	M	birth	83
	6	14.1	110	F	8 mos.	85		5	15.5	87	F	3 years	55
	8	14.10	100	F	4 years	93		7	15.9	112	F	birth	92
	10	14.9	99	M	birth	70		9	17.	95	F	birth	87
								11	17.9	112	F	?***	75
								12	18.6	81	F	birth	62
9A	2	17.11	111	M	18 mos.	93	9A	1	19.	113	M	?***	67
	4	16.	110	F	birth	93		3	17.8	87	F	birth	80
	6	14.6	110	F	?***	67		5	16.3	103	F	9 mos.	83
	8	16.5	116	M	birth	67		7	15.7	90	F	birth	80
	10	14.10	114	F	1 year	97		9	18.	121	F	10 mos.	90
								11	16.6	83	M	7 years	62

*Left-handedness **Multiply Handicapped ***Onset of Deafness Unknown

TABLE II

DESCRIPTIVE DATA ON THE SUBJECT GROUPS

Experimental Groups					Control Groups				
Class	Total Ss	$\bar{X}$ Age	$\bar{X}$ IQ	$\bar{X}$ Hearing Loss in Decibels	Class	Total Ss	$\bar{X}$ Age	$\bar{X}$ IQ	$\bar{X}$ Hearing Loss in Decibels
5A	5	13.7	93	88	5A	4	14.3	95	83
5B	5	13.7	93	58	5B	4	12.8	101	66
8A	5	15.1	105	75	8A	7	16.6	98	78
9A	5	16.2	112	83	9A	6	17.2	100	77

TABLE III

COMPARISON BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Class List	N Ss	Pre-Test Mean	Pre-Test SD	Pre-Test Standard Error	Post-Test Mean	Post-Test SD	Post-Test Standard Error	Gain Scores	SED	Pre-Post Test Coeff. of Cor.
5A E.*	5	24.8	6.6	3.3	41.4	2.7	1.4	16.6	3.2	.66
5A C.*	4	28.	10.3	6.1	24.	12.4	7.1	4.	9.2	.81
5B E.*	5	42.	11.2	5.6	46.	5.8	2.9	4.0	7.2	.85
5B C.*	4	46.	13.8	8.1	45.	17.5	10.3	-1.0	12.8	.38
8A E.*	5	79.2	9.9	4.9	78.6	10.8	5.4	.6	7.1	.88
8A C.*	7	66.9	11.2	4.6	61.4	5.9	2.4	-5.5	5.4	.96
9A E.*	5	72.	9.5	4.7	78.2	6.	3.	6.2	5.8	.68
9A C.*	6	69.2	14.0	.63	61.2	12.4	5.6	-8.0	6.2	.68

E.* = Experimental Groups C.* = Control Groups